

Remarks

Claims 21-30 are pending upon entry of the foregoing amendments.

Amendments to the Claims

Claims 21 and 28 have been amended to specify that the at least two flow field paths have path *lengths* different from one another. Support for this amendment is found in the specification at paragraphs 0030, 0031, 0034, and 0037 and in FIGS. 2 and 3 (Patent Application Publication No. 2004/0265675 A1).

New claims 29 and 30 have been added. Support for the new claims is found in the specification at paragraph 0011, 0012, 0013, 0015, and 0030, and FIG. 2.

Rejections Under 35 U.S.C. § 102

Claims 21-26 and 28 were rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent 4,292,379 to Kothmann (hereinafter “Kothmann”). Claims 21-28 were rejected under 35 U.S.C. § 102(e) as anticipated by U.S. Patent Application Publication No. 2004/0151970 to Ferguson (hereinafter “Ferguson”). Claims 21-28 were rejected under 35 U.S.C. § 102(e) as anticipated by U.S. Patent 6,780,536 to Debe et al. (hereinafter “Debe”). The rejections are respectfully traversed.

Applicants’ Fuel Cell Flow Field Plates

Applicants teach that it is “desirable or convenient to design fuel cell flow fields with significantly different path lengths and path geometry, which would have markedly different flow resistances. Yet, considerations relating to fuel cell efficiency and to stoichiometry dictate that electric current density be uniform in all paths, which may not be the case with substantially different flow resistances.” ¶ [0013]. Applicants developed a flow field design to enable

uniform current density even where the path lengths are geometries are complex and flow resistances substantially different among the flow paths. The claimed fuel cell has a flow field plate two flow field paths that have path lengths different from one another, and is dimensioned to provide a molar flow rate of a reactant through the flow field path such that the at least two electrochemical surface areas of the flow field plate have a current density equal to one another.

Kothmann

Kothmann discloses a fuel cell having parallel and coextending fuel and oxidant channels which provide more fuel and oxidant nearest their respective inlet channels. Kothmann does not teach a flow field plate that has at least two flow field paths *having different lengths* from one another. The reference appears to implicitly assume that path lengths are necessarily equal, and suggests that only channel width and channel height may be varied. Kothmann clearly fails to teach *serpentine* flow paths or multiple paths where at least two flow field paths have different numbers of turns, different lengths of straight portions, or both different numbers of turns and lengths of straight portions from one another.

Ferguson

Ferguson discloses a flow field having channels wherein the active portion comprises a first subsection having a cross-sectional profile different from the channels within a second section. Ferguson fails, however, to teach a flow field plate that has at least two flow field paths *having different lengths* from one another, yet are dimensioned to provide a molar flow rate of a reactant through the flow field path such that the at least two electrochemical surface areas of the flow field plate have a current density equal to one another.

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AMENDMENT AND RESPONSE
TO OFFICE ACTION

Debe

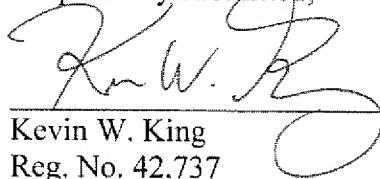
Debe discloses a fluid distribution assembly having a flow field device and a fluid transport layer disposed between the flow field device and a target area. Debe discloses a channel having parallel courses. It does not, however, to teach a flow field plate that has at least two flow field paths *having different lengths* from one another, yet are dimensioned to provide a molar flow rate of a reactant through the flow field path such that the at least two electrochemical surface areas of the flow field plate have a current density equal to one another.

Conclusions

The claims as amended are novel and patentable over the prior art of record. Allowance of each of the pending claims 21-30 is therefore respectfully solicited.

The undersigned kindly invites the Examiner to contact him by telephone if any outstanding issues can be resolved by conference or examiner's amendment.

Respectfully submitted,



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